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Accelerometer

Triaxial, Resistive

**Type M322A...,
M324A...**

The triaxial accelerometer Type M32xA... was developed for universal use in crash test applications for in-dummy testing and for operations at light structures inside the car.

- Measuring range 1 000 g
- Low transverse sensitivity
- Small linearity error
- Frequency response 0 ... 3 000 Hz (±5 %)
- High shock resistance
- Very robust housing

Type M322A...

Type M324A...

Description

Type M32xA... is based on a silicon sensor element with gas damping and integrated overload stops. The sensor is realized as a passive full bridge circuit and supplies an output of 360 mV at 1 000 g.

Both versions are available with ID modules, either a UPS module (Universal Parameter Memory) or a Dallas module can be chosen for this functionality. These modules are integrated in an external housing in the wiring or in the connector. The sensors have different cable outlets: Type M322A... on top, Type M324A... on the side.

Application

The damped sensor element disables both parasitic frequencies and the system's natural frequency. The sensor covers a large frequency response up to 3 000 Hz and a small phase shift below 2° at 1 kHz. The large measurement range, the good non-linearitiy and the high shock resistance enable its use in many measuring technique applications. Two screws fix the sensor at the measurement location.

Technical Data

Measuring range	g	±1 000
Sensitivity at 80 Hz[1]		
typ.	mV/g	0,18
min./max.	mV/g	0,16/0,22
Supply voltage	VDC	2 ... 15
Zero measurand output[2] (typ./max.)	mV	±10/±20
Temperature drift, ZMO (max.)	mV	±3
Temperature drift, sensitivity[3] (max.)	%/°C	0,18
Source resistance (SIG+ to SIG–)	kΩ	1,7
Frequency response, ±5 %[4]		
X-axis	Hz	2 800
Y-axis	Hz	2 800
Z-axis	Hz	3 000
Current consumption	mA	6
Amplitude non-linearity 0 ... 200 g[5] (typ./max.)	%	±0,1/±0,3
Transverse sensitivity[6] (typ./max.)	%	2/3
Bridge resistance	kΩ	1,7
Insulation resistance[7] (min.)	MΩ	90
Shock (>2 ms pulse)	g	8 000
Max. sine load (<2 kHz, peak-peak)	g	200
Warm-up period (max.)	s	120
Operating temp. range	°C	–20 ... 80
Storage temp. range	°C	–30 ... 90
Mounting		screwed

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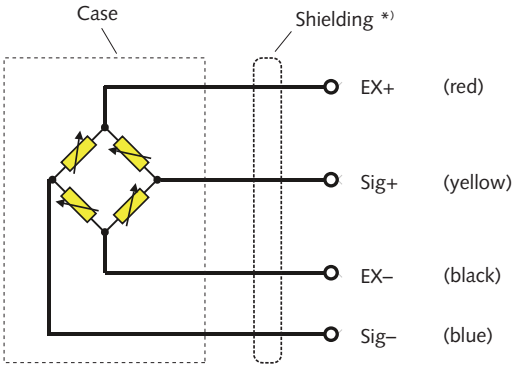
Technical Data (Continuation)

Damping ration		
typ.		0,35
min./max.		0,3/0,5
Housing material		Alu alloy
Weight (without cable and additional housing)	grams	12
Dimensions		
M322A...	mm	21,5x14,4x22,4
M324A...	mm	21,5x14,4x22,1
Mounting screws M2,5x22	units	2
Mounting torque	N·m	0,45

All specifications are typical at 25 °C and rated at 10 V sensor excitation, unless otherwise specified.

1) Sensitivity at 80 Hz, at 50 m/s² sine amplitude
2) Values for ZMO only valid when mounted
3) Range of 0 ... 40 °C
4) DC up to (min.)
5) Values calculated with pendulum calibration up to 165 *g*
6) Accelerometers with selected transverse sensitivity ≤1 % are extra charged
7) All wires to shield (GND), measured with 10 V (DC)



*) Shielding is connected to plug housing

Fig. 1: Schematic diagram of one axis (the sensor has three axes)

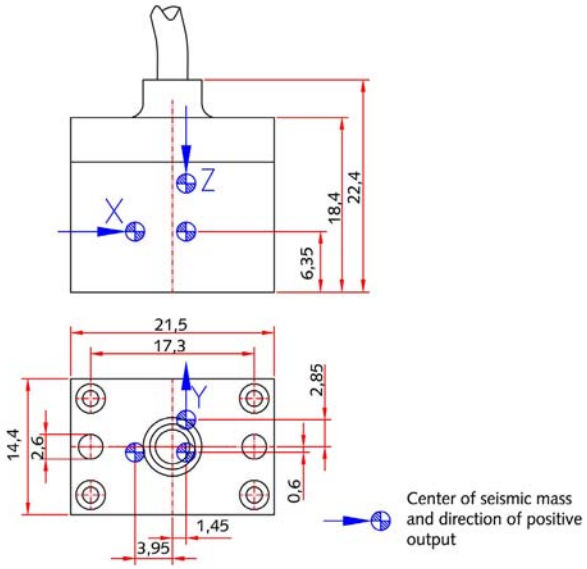


Fig. 2: Dimensons and directions of action, Type M322A...

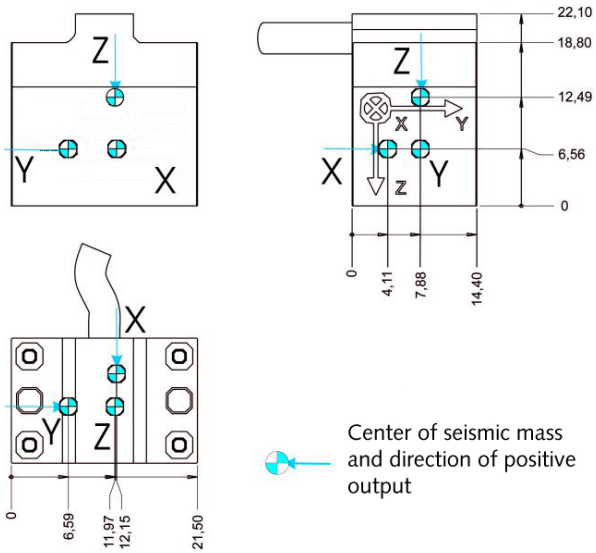


Fig. 3: Dimensons and directions of action, Type M324A...

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Included Accessories — **Type No.**

- Mounting screws — on request

Optional Accessories — **Type No.**

- Pendulum calibration adapter — on request
- Sine calibration adapater — on request
- Drilling jig, mounting plate — on request
- Add. label with serial number, plug side — M015KABID
- ID module — on request
- Add. label with ID number at sensor — M015KABID
- Add. shunt — on request

Ordering Key

Type M32 ☐☐☐☐☐☐☐

Cable Outlet

On top	**2A**
On side	**4A**

Design

Standard	**M1C6**

Cable Length before Electronics

0 cm	**00**
<10 cm (digit x 1 cm)	**C#**
10 cm ... 9,9 m (digit x 10 cm)	**##**
10 m ... 90 m (digit x 10 m)	**D#**

Additional Electronics

Sensor detail, as per type declaration acceleration TP-650-1	**#**

Cable Length after Electronics

0 cm	**00**
<10 cm (digit x 1 cm)	**C#**
10 cm ... 9,9 m (digit x 10 cm)	**##**
10 m ... 90 m (digit x 10 m)	**D#**

Connector

Conn. type, as per TP-600	**#-**
Conn. assignment, as per TP-600	**-#**

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